

Mathematics support centres in Dublin – report from a visit May 2015

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Introduction

Mathematics support centres have been established at several universities during the last ten years. MatRIC has established contact with such centres in England, Ireland and other countries. During the two days 11 -12 May I visited four such support centres for mathematics at universities and university colleges in Dublin. Lecturer in mathematics Ciarán O'Sullivan kindly invited me and arranged for meetings with four colleagues in different locations in the Dublin area and supported and arranged the local travel for me. In this report I give a brief account of my experiences and impressions during this visit together with links for further reading.

Already during the short planning period for my visit I experienced the leaders of the support centres as a good collaborating community that shared experiences and helped each other. Ciarán O'Sullivan took me to visit Maynooth University in his car. During the journey he informed both about the university and about the close collaboration between people running mathematics centres in Dublin and the nearby areas. The centre leaders keep contact and help each other. They also have contact with English centres and in particular Loughborough which is one of the leading centres in England. The centres I visited use some of the material developed in England, such as the mathematics support leaflets that are in use. Furthermore the leaders and tutors working at the centres have annual meeting together with the English centres.

Schedule of visits

Monday 11th May

Dr. Ciarán Mac an Bhaird at Maynooth University, about an hour drive from Dublin city,

<https://www.maynoothuniversity.ie/campus-life/explore-maynooth-dublin>

Dr. Cormac Breen in Dublin Institute of Technology at 14.00, <http://www.dit.ie/>

Tuesday 12th May

Dr. Eabhnat Ní Fhloinn, Dublin City University (DCU), <https://www.dcu.ie/>

Dr. Anthony Cronin, University College Dublin, <http://www.ucd.ie/>

Reports from each visit

1. Maynooth University, meeting with Dr. Ciarán Mac an Bhaird

Maynooth University is an old university, originally established to educate priests, and later developed to give mathematics, science and technology education and some other subjects. Maynooth has about 10 000 students on campus, and provides many large mathematics courses, with up to 500 students gathered for lectures in a big auditorium. A mathematics support centre has been running for about 10 years and is well established, see <http://supportcentre.maths.nuim.ie/>.

Ciarán took me to the Maths Support Centre at Maynooth, at the moment running in a regular classroom, because of examinations set up in the usual Maths Support Centre room, which is much larger. About 40 students and five tutors worked in the room. The day I visited was close to examinations and perhaps that stimulated the activity, as also does the obligatory submission of students work during the term. The students raised their hands when they need help, and tutors

circulated, giving hints to help the students to move on. **The idea is not to just give answer, but support the students to think about the problems and get help on the way to a solution.**

In the regular setting students sit around circular tables; there are some support leaflets available with information about problems that are common, together with some of the books that are in use. The same leaflets were used in all the centres I visited, and originate from the maths centre in England, <http://www.mathcentre.ac.uk/> . Students are asked to bring their own textbooks and lecture notes when they come to the support centre.

When I visited, about 40 students were present. Five tutors walked around and sat down with students as they raised their hands to get help. It was impressive to see how they worked. The students seemed to be concentrated and discussed partly with their peers and with the tutor.



Figure 1 Students working in groups of 4 to 6

The tutors at the centre are given a short introductory course before the start of term, in order to have **a common philosophy of working, which is not just to give the answers but to help students themselves to find answers.** Tutors gave

hints or demonstrated how they worked on a problem, sometimes giving just starting points “try this” and or similar. The intention was to help students think. It does not matter so much what the answer is, the mathematical reasoning is most important. I observed a girl raising her hand and waiting for a while to get help. Since the other tutors seemed busy, Ciarán moved over to the student to give her help before we left the room.



Figure 2 Ciarán gives support to students

Tutors are recruited from good graduate students, mainly by their lecturers informing the centre leader. The potential tutors have to present a CV and are interviewed to be sure they are suitable for the job.

An administrative consultant, full time, keeps a record of students’ attendance and completes the statistical data. When students come to the Maths Support Centre they get a small form to fill in, for keeping records of attendance. The statistics are compared with student success rates at examinations and give important information to convince the administration that the centre is worthwhile running. The cost of a student not completing is high compared to the expenses for running the centre, so only a small number of successes justifies the expense, according to information from Ciarán.

The attendance is high in periods just before the students have to deliver assignments, which they have regularly. This is perhaps one of the reasons for success of the centre, because it urges the students to work on and get support for their assignments at the Centre.

Ciarán provided me with further information about maths centres, websites with resources etc. According to him, the best places to start are www.mathcentre.ac.uk, <http://sigma.coventry.ac.uk/>, www.khanacademy.org, www.patrickjmt.com and there are a lot put together by topic on the

Maynooth centre's website <http://supportcentre.maths.nuim.ie/resources> and by scrolling to the bottom of that page, there are some that are produced locally at Maynooth. Reports and start-up help from Sigma, an organisation for maths centres, are available from <http://www.sigma-network.ac.uk/>

2. Dublin Institute of Technology (DIT) meeting with Dr. Cormac Breen.

This Maths Centre at DIT is smaller than the centre at Maynooth, it has been running for 3 years and has two campuses to serve. The Centre(s) operate four days a week 10 hours in one location and three days a week 8 hours at the other campus. Cormac Breen works full time at the centre and has graduate students together with him. He does both the administration, tutoring and follow up on registration. He writes reports and some educational papers. For first time registration of a student he uses a form with some details, which includes how the student found out about the Maths Centre. Furthermore, a short form for attendance is filled in one line per student and includes the topics the students ask about.

Tutors are graduate students on a one year contract. Potential tutors present a CV and have an interview to find out who is suitable. Cormac emphasised that their attitude and personal qualities for helping is important. During the interview he gives them a task to teach for 5 minutes to check suitability for the work. Guidelines are provided for tutors about what is expected and how to handle the questions. Guidelines for students tell what they can expect from the centre.

Cormac mentioned important points for starting a centre: recruit tutors, set timetable. Use material from Loughborough, available on web, for download and print. A small leaflet presents the centre schedule and 'scribble paper' with the centre heading is available together with calculators and pens on the table. Cormac runs workshops on specific topics when he notices problems or responses to e-mails sent out to get input from students.

3. Dublin City University (DCU) meeting with Dr. Eabhnat Ní Fhloinn

We started with coffee together with **Eabhnat** and a colleague and talked about the aim of the centre and other issues. We discussed also other interests in common, e.g. organisation of the university in faculties and with a joint institute for mathematics and mathematics education (Agder model). This was clearly of interest at their university at the moment.



Figure 3 Students at the Maths Centre, DTU

The mathematics centre was not in operation due to examinations, but the room was open and there were four groups of 2 - 3 students working with their preparation for exam.

The room is inside the library and access is controlled by students' cards so the room can be open outside the normal centre opening hours. The first years the

mathematics centre was running in a small classroom, quite some distance from the library and central activities. The number of students coming to the centre rose considerably when they had the new room, with a glass partition, and illustrations relevant for mathematics on the glass. The centre is open to undergraduate mathematics students, not to students on higher level programmes.

A short introductory course for tutors of a day/ or half day is organised to present the working model, give guidelines on the way to handle various situations. Rules like: be kind, not threatening, and how to handle questions they cannot answer at the moment. Students are registered when they arrive; they fill in a paper form which hopefully later will be electronic.



Figure 4 DTU centre behind the glass partition

Another centre, which is set up by language teachers, has started a similar support service, in particular for writing. The writing centre works in a different way, with one to one support and booking of time. For the Maths Centre it is just for the students to come. Eabhna was convinced the location of the centre in the library made a huge difference to the number of users and the drop in model convenient.

4. University College Dublin (UCD) meeting with Dr. Anthony Cronin, <http://www.ucd.ie/msc/>.

Together with Anthony Cronin I also met the previous manager, Nuala Curley, who is now retired and are doing a PhD on the use of the centre and problems coming up. The centre's website has a video presenting the centre activity.

The maths centre here is also in the library and the same consequences are mentioned as Eabhna described at DCU. The room at UCD is smaller than in DCU, but they have the same experience with location, that number of users rose considerably when the centre moved to the library. But also here it took some years before this location was provided. There is a corner for writing help just inside the door, but according to Anthony and Nuala, that ought not to be in the same room, since some students get confused and end up with questions to maths tutors that should be directed towards another helper. **The support centre is not just for the weak students, it is also for those who want to improve their results.**

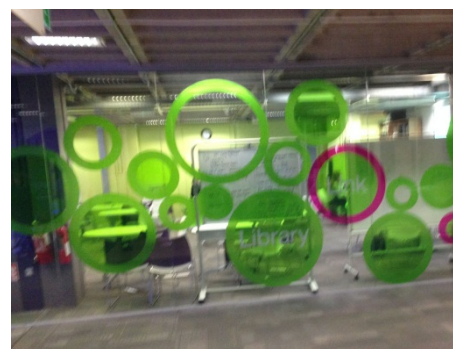


Figure 5 Looking into the centre at UCD

The centre use an electronic register system and database which keep records of use. Students enter their student number and come into a queue that is displayed on the screen. When they start up they also give consent to use the data, anonymously, from the database for research and reporting. The students in the queue can be moved to later in the queue if the helper leaves them to work on their own for a while and will follow up later. The tutors use small tablets to handle the queue and

write in some notes about what topic the help is about. The registration of users and what they ask about, and probably how many times they use the centre, is important for reporting back to the university leadership, and for further financing of the centre.



Figure 6 Leaflets available

Nuala generated her data from 8 weeks at the start of the autumn term. She filled in missing information from written notes and copies of students' work in the centre. Nuala is going to analyse this further for her PhD, not just attendance but what students worked on. She has worked for two years about this now.

As in the other centres there are support leaflets about different maths topics available. Some are from the Maths Support Centre in England and others are produced by their own teachers/tutors. Some equipment is available, and pencils with math centre and web address printed on, for advertisement. The centre is open to all kinds of students dealing with mathematics and statistics; also those who need statistical analysis for PhD research that some other centre do not want to take on.

As with the other centres, important points for recruiting tutors/helpers: interview, CV and short trial lecture 5 – 10 min during the interview.

The most recent annual reports are available on the centre webpage:

<http://www.ucd.ie/msc/mscannualreports/>

5. Conclusion

For our new centre at the University of Agder, to be operating at both campuses in Kristiansand and Grimstad, there is a lot to learn from the centres operating in the Dublin area, from leaders and tutors and from their centre websites. Furthermore, a large collection of valuable material is available from the collaboration of centres in England on www.mathcentre.ac.uk and <http://sigma.coventry.ac.uk/>. I had a very inspiring visit to Dublin and I am very grateful for the hospitality and support for our efforts to start.